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In order to show that Mr. Boulenger's opinions regarding *Babina* are entirely untenable it is only necessary to state the fact that the "dagger" is fully developed in adult specimens of both sexes. Our collection includes females which contain eggs nearly ready for laying. These are armed with spurs as large and formidable as are to be found in males.

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A NOTE ON *BABINA*, THE DAGGER-FROG.

Some time ago the American Museum received from Nago, Okinawa Island, a large but sexually immature female specimen of *Babina holsti* (Boulenger). *Babina* was originally described by Thompson¹ who considered the presence of the "dagger" (a rudimentary thumb or prepollex²) as sufficient reason for separating *Rana holsti* Boulenger and *R. subaspera* Barbour from their congeners. Recently Boulenger³ in referring *Babina* to the synonymy of *Rana* has stated that the "dagger" is only a secondary sexual character peculiar to the males. This statement must have been an oversight on Boulenger's part for his type specimen (Brit. Mus. 92. 9. 3. 19) of *R. holsti* is a female with well-developed dagger⁴. Further our immature female has a very distinct "dagger" and Dr. John Van Denburgh has informed me by letter that several of the specimens in the series reported upon by Thompson and later by himself are adult with "daggers" as large as those of the males.

Other species of frogs besides those referred to *Babina* are capable of exposing the terminal phalanges

¹Prodrome of a Description of a New Genus of Ranidae from the Loo Choo Islands. Herpetological Notes, No. 1, June 15, 1912, p. 2.

²The homologies of this bone have never been satisfactorily determined.

³C. R. Acad. Sci. Paris, CLXV, 1917, p. 989.

⁴Stejneger, Bull. U. S. Nat. Mus., No. 58, 1907, p. 105, fig. 84.

⁵See Barbour, Occ. Papers Mus. Zool., Univ. Mich., No. 44, 1917.

of one or more of the digits. Boulenger¹ has discussed these other forms in some detail but he does not make any suggestion as to the possible significance of this peculiarity. It is noteworthy that these so-called "claws" occur in only two groups of ranids. The first group comprises the three closely related genera *Astylosternus*, *Gampsosteonyx* and *ScotoBLEPS*. *Astylosternus* and *Gampsosteonyx* grade into each other, while *ScotoBLEPS* originally defined as a "*Rana* with a vertical pupil" might more properly be called an *Astylosternus* which has developed a bony deposit in its sternum. The peculiar divided omosternum of these three genera suggests specialization. It is not a primitive structure.

The second group of frogs having "claws" are all species of *Rana* grouped by Boulenger in the subgenus *Ptychadena* because of their peculiarly modified pectoral girdle and their claw-shaped phalanges which in most cases do not pierce the skin. I may now add another species to this group, *Rana christyi* Boulenger, a form in which the terminal phalanges are more commonly exposed than in *R. mascareniensis* Dumeril & Bibron, the type of Boulenger's *Ptychadena*.

At the present time it is only possible to conclude with Boulenger that these exposed phalanges have no special function (except possibly the "dagger" of *Babina*). It is well to emphasize, however, that the "claws" occur only in two natural groups which seem to be the end stages of two lines of specialization. Not always can a function be assigned to a specialization in the Salientia. The modification of the pectoral girdle, the development of bony casques or the loss of teeth² have been shown in a number of cases to be unaccompanied by any change of habits in the derived

¹Idem pp. 987-990.

²Boulenger, Proc. Zool. Soc. London, II, 1900, p. 438, Pl. XXVIII, fig. 1.

³This last type of modification is discussed in another paper, Barbour & Noble, 1920, Bull. Mus. Comp. Zool., Cambridge, Mass., LXIII, p. 408.

form. It would be interesting to know definitely how far change of function has accompanied change of form in *Babina*.

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SALT-WATER MINNOW IN FRESH WATER.

On February 23, 1919, I caught with a dip-net, an immature Mummychog or Common Killifish (*Fundulus heteroclitus macrolepidotus*) in a ditch in the edge of a salt-marsh at Douglaston, on the north shore of Long Island. On the same day I placed it in a fresh-water aquarium in which were two or three small goldfish. It was fed the same food as the goldfish. To my great surprise it lived in fresh water for eleven months or until January 23, 1920, on which date it was found dead in the aquarium from some cause not evident to me. The specimen was carefully examined by J. T. Nichols, Associate Curator of Fishes in The American Museum of Natural History, and positively identified as indicated above.

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